

PRACTICE EXERCISES

Classify each sentence as a conjunction or a disjunction and state whether it is true, false, or open.

1. The sun rises in the east *and* the moon rises in the west.
2. A rectangle is a polygon *or* a triangle is a quadrilateral.
3. $-(-6) = 6$ *and* $-(-4) > -4$
4. $x + 3 > 5$ *and* $x - 5 < 2$
5. $-(-4) < 4$ *or* $-10 > 10 - 10$
6. $5 + 6 = 11$ *or* $9 - 2 = 11$
7. $17 > 12$ *or* $6 < 9$
8. $-9 - 10 < -8$ *or* $-2 < 6 - 34$

For each of the following sets, find $A \cap B$ and $A \cup B$.

9. $A = \{3, 4, 5, 6, 7, 8\}$; $B = \{2, 4, 6, 8, 10\}$
10. $A = \{a, e, i, o, u\}$; $B = \{h, i, d, e\}$
11. $A = \{3, 4, 5, 6, 7, 8\}$; $B = \{1, 2, 3, 4, 5, 6\}$
12. $A = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$; $B = \{0, 3, 6, 9, 12, 15\}$

Graph the solution set.

13. $x > 0$ *and* $x < 6$
14. $x > 4$ *and* $x < 10$
15. $x > -8$ *and* $x < -2$
16. $x < -3$ *or* $x > 3$
17. $x < -5$ *or* $x > 2$
18. $x < 2$ *or* $x > 6$
19. $x > -6$ *and* $x < 4$
20. $x > -8$ *and* $x < -1$
21. $x < 1$ *or* $x > 5$

State whether each expression represents an intersection or a union of sets and find the set that represents that intersection or union. Assume that the universal set is the set of integers between -10 and 10 .

22. The set of multiples of 3 *and* the set of even integers
23. The set of odd integers *or* the set of multiples of 5
24. The set of odd integers *and* the set of even integers
25. The set of even integers *or* the set of odd integers
26. The set of nonnegative integers *and* the set of even integers
27. The set of nonpositive integers *or* the set of even integers
28. $\{x: x > 7\}$ *and* $\{x: x < 12\}$
29. $\{x: x < 4\}$ *or* $\{x: x > 8\}$
30. $\{x: x < 5\}$ *and* $\{x: x > 0\}$
31. $\{x: x < 4\}$ *and* $\{x: x < 0\}$
32. $\{x: x < 10\}$ *and* $\{x: x < 0\}$
33. $\{x: x > 8\}$ *and* $\{x: x < 6\}$